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Akio Nishiyama

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EXAMINER

TORRES, JOSE

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/698,368	Applicant(s) NISHIYAMA, AKIO	
	Examiner José M. Torres	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 17, 2007 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 8-16 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. ("Adaptive Image Compression for Wireless Multimedia Communication", IEEE International Conference on Communications, Vol. 6, 11-14 June 2001, pp. 1925-192).

Re claim 1: Taylor et al. disclose an image compression method for compressing image data ("Adaptive Image Compression"), comprising: storing compression characteristics data indicating compression characteristics of plural types of

images in advance (FIG. 7, "Image Quality Parameters Table", Page 1928, Right Col., First two Paragraphs); acquiring an initial compression parameter (The initial compression parameter is the compression parameter used to compress the image to create the table.); performing a compression process on image data of an image to be compressed based on the initial compression parameter (The compression process based on the initial compression parameter is performed for the creation of the table, see Section III, Pages 1927-1929); acquiring a corrective compression parameter (Selection of the optimal image compression parameter, see Section III, Pages 1927-1929); and performing another compression process on the image data of the image to be compressed based on the corrective compression parameter (Once the compression parameter that maintain the image characteristics is chose, the image is compressed using this optimal compression parameter, see Section III, Pages 1927-1929), wherein the compression characteristics indicate a relationship between a bit rate (Total Bits per image), which is a ratio between data volume and the number of pixels of image data, and a compression parameter ("Quantization Value") associated with image quality ("Image Quality (PSNR)") and compression rate ("Compression Ratio (in bits per pixel)", see Section III, Pages 1927-1929), wherein said acquiring an initial compression parameter acquires the initial compression parameter ("Initial Quantization Level") based on compression characteristic data of an average image ("an average over a large number of images is used") and a target bit rate (The table contains information for the different combination,

therefore, a target is set for each combination), and wherein said acquiring said corrective compression parameter includes: acquiring from the compression characteristic data, a complexity of the image to be compressed based on a bit rate of compressed image data acquired in performing said compression process, and said initial compression parameter and acquiring from the compression characteristic data the corrective compression parameter based on the complexity of said image to be compressed and the target bit rate (When the selection is made for the optimal compression parameter a search is made for the quantization value that yields acceptable image quality, therefore, a complexity, which is based on the addition of the bits per pixel for the entire image and the compression parameter used, is determined and based on these results the optimal compression parameter is selected, see Abstract and Sections II and III on Pages 1925-1929.).

Re claim 2: Taylor et al. disclose wherein the compression process comprises a compression process based on Joint Photographic Experts Group ("JPEG Image Compression Algorithm") standard, and wherein the compression parameter comprises a Q-value ("Quantization Value", Abstract and Section II A, Pages 1925 and 1927).

Re claim 6: Taylor et al. disclose wherein said compression process comprises at least one of a discrete cosine transform, a quantization process, and a Huffman coding process (Section II, Third Paragraph, Page 1926)..

Re claim 8: Taylor et al. disclose performing a compression process on sample image data for a sample image using a predetermined compression parameter, to acquire a bit rate from a data volume of compressed sample image data and the number of pixels of said sample image (The creation of the Image Quality Parameters Table is done by performing compression on an average image, see Section II, Page 1928, First two Paragraphs and FIG. 7.).

Re claim 9: Taylor et al. disclose repeating said compression process on said sample image data plural times using different compression parameters (As can be seen from FIG. 7 each result is obtained by varying the Quantization Level and the Virtual Block Size).

Re claim 10: Taylor et al. disclose wherein said sample image comprises plural sample images of varying complexity (The average image utilized for the initial compression vary in complexity (e.g. from Image Quality having 32dB at 8 VBS to 30dB at 5 VBS).

Re claim 11: Taylor et al. disclose wherein said storing said compression characteristics comprises storing said compression characteristics in one of a

table and a function for approximating said compression characteristics (FIG. 7 represent the table on which the compression characteristics are stored, see Page 1928.).

Re claim 12: Taylor et al. disclose acquiring said target bit rate from a number of pixels of said image data of said image to be compressed and a target data volume of compressed image data (The target bit rate is directly related to the target data volume which is acquired when the selection step is being performed based on the conditions and requirements for mobile communication, see Section I and Section III Energy Savings Due to Adaptive Image Compression, Pages 1925 and 1929).

Re claim 13: Taylor et al. disclose acquiring a data volume of said compressed image data generated by the compression process (The data volume acquired is obtained once the image is compressed based on the compression parameters).

Re claim 14: Taylor et al. disclose judging whether said acquired data volume is within a range of limitation (When the selection step is being performed the image quality is tested to see if it meets the required limit to satisfy the constraints, See Section III Pages 1927-1929).

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Re claim 15: Taylor et al. disclose if said acquired data volume is within said range of limitation, terminating said compression process (The process is repeated until the optimal parameters are found, see Section III Pages 1928-1929).

Re claim 16: Taylor et al. disclose if said acquired data volume is other than within said range of limitation, performing said acquiring said corrective compression parameter, said acquiring said corrective compression parameter further comprising: acquiring a bit rate of said compressed image data; acquiring a function that gives said bit rate of said compressed image data for said initial compression parameter with reference to said compression characteristics data; acquiring another compression parameter by using said target bit rate and said acquired function; and repeating said performing said compression process using said another compression parameter and said judging whether said data volume of said compressed image data is within said range of limitation until said data volume of said compressed image data is within said range of limitation (As disclosed with respect to FIG. 9 Algorithm for step 3, in order to make a selection the data volume needs to be within the limitation range, if not, the process is repeated until the optimal parameters are identified, see FIG. 9, Section III Pages 1928-1929).



Re claim 20: Taylor et al. disclose wherein said acquiring said complexity of said image to be compressed comprises acquiring the following function corresponding to said image to be compressed:  $Q=f(r)$ , where Q denotes the compression parameter and R denotes the bit rate (As shown in the Algorithm of FIG. 9, the quantization level is chosen while the latency and bandwidth constraints are met, and since the energy is calculated for each image quality and VBS, the rate (image\_size \* curr\_CR) is related to the Quantization Level, see Section III Pages 1928-1929).

Re claims 3, 4, and 21: Taylor et al. disclose an image compression apparatus as claimed in at least the Multimedia Capable Radio, which inherently consists of at least a memory to store the Image Quality Parameters Tables and a processor to execute the compression process and the parameter acquisition. (See Abstract, Section II, Section III Pages 1925-1929, and Claims 1, 2, and 20 above.).

Re claims 5, 19 and 22: Taylor et al. disclose an image compression apparatus/computer as claimed (Similar to claim 3 above) in at least the Multimedia Capable Radio, which inherently consists of at least a memory to store the Image Quality Parameters Tables and a processor to execute the compression process and the parameter acquisition. (See Abstract, Section II, Section III Pages 1925-1929, and Claims 1 and 20 above.).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. in view of Kuniba (U.S. Pat. No. 6,697,529). The teachings of Taylor et al. have been discussed above.

As to claim 7, Taylor et al. does not explicitly disclose wherein said Q-value comprises a variable between 0 and 1, and an image quality of a compressed image formed by compressed image data is improved by increasing said Q-value.

Kuniba teaches wherein said Q-value ("Initial Scale Factor ISF") comprises a variable between 0 and 1 ("0.1, 0.3, and 1.0"), and image quality of a compressed image formed by said compressed image data is improved by increasing said Q-value (As can be shown the ISF values are between 0 and 1, and the amount of data obtained varying the factor is directly proportional to the scale factor, therefore, obtaining more data corresponding to better image quality. FIG. 4, S35, Col. 6 line 63 through Col. 7 line 10).

Therefore, in view of Kuniba, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor et al.'s method by incorporating the method step of varying the Q-value between 0 and 1, and improving the image quality by increasing the Q-value in order to execute quantization that

corresponds to the quality and the content of the input data in a flexible manner (Col. 4 lines 8-23).

As to claim 17, Taylor et al. does not explicitly disclose an input device for inputting said image data and target data volume for performing said compression process; and an output device for outputting said compressed image data.

Kuniba teaches an input device (FIG. 1, "Input Section that comprises Input Device 13 such as a keyboard, and External Apparatus 23 such as an electronic camera.) for inputting said image data and target data volume for performing said compression process; and an output device (FIG. 1, "Monitor 19") for outputting said compressed image data (The keyboard is used by the developer to input the information such as the target compression rate desired, the electronic camera to input the image data, and the monitor to output the compressed image. Col. 6 lines 26-37).

Therefore, in view of Kuniba, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor et al.'s apparatus by incorporating an input and output device, as taught by Kuniba, in order to have an apparatus with flexible parameter inputting and contemplating the visual appearance of the image once it is compressed (Col. 6 lines 26-45).

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. in view of Yovanof et al. (U.S. Pat. No. 5,677,689). The teachings of Taylor et al. have been discussed above.

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As to claim 18, Taylor et al. does not explicitly disclose that the apparatus comprises a digital camera.

Yovanof et al. teaches a digital camera ("KODAK DCS200 Digital Camera") comprising an image compression apparatus (Col. 8 line 64 through Col. 9 line 2).

Therefore, in view of Yovanof et al., it would be obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor et al.'s image compression apparatus by incorporating it on a digital camera, as taught by Yovanof et al., in order to easily accomplish storage requirements for permanent storage and working buffer (Col. 9 lines 12-20).

### ***Response to Arguments***

#### **Claim Rejections under 35 U.S.C. § 102**

7. With respect to claims 1-6, 8-15 and 18, Applicant's arguments have been fully considered, but are moot in view of the new ground(s) of rejection.

#### **Claim Rejections under 35 U.S.C. § 103**

8. With respect to claims 7, 16, 17 and 19, Applicant's arguments have been fully considered, but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Viscito et al. disclose an Apparatus and Methods for Adaptive

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Digital Video Quantization and Yamauchi et al. disclose an Image Data Processing Apparatus that Automatically Sets.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José M. Torres whose telephone number is 571-270-1356. The examiner can normally be reached on Monday thru Friday: 8:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMT  
10/17/2007

JINGGE WU  
SUPERVISORY PATENT EXAMINER

